

WHAT IS CLAIMED IS:

1. A method of preparing porous materials,  
comprising the steps of:

(A) making a solution containing silicon and  
5 surfactant be in contact with a substrate having  
alignment control ability; and

(B) drying said substrate made in contact  
with the solution to remove the solvents  
contained in said solution.

10

2. A method according to claim 1, wherein  
silicon is contained in said solution in a state  
of compound.

15

3. A method according to claim 1 or 2,  
wherein silicon is contained in said solution as  
silicon alkoxides.

4. A method of preparing porous materials,  
20 comprising the steps of:

coating a substrate having alignment control  
ability with a surfactant solution containing  
silicon alkoxide; and

drying said substrate.

25

5. A method according to claim 4, wherein  
patterned mesostructured silica with uniaxially

aligned channel structure is formed by a step of  
coating a desired position of a substrate having  
alignment control ability with a surfactant  
solution containing silicon alkoxide in a  
5 desired shape and a step of drying said  
substrate.

6. A method according to claim 4 or 5,  
wherein said substrate with alignment control  
10 ability is a silicon single crystal substrate  
having (110) orientation.

7. A method according to claim 4 or 5,  
wherein said substrate is a substrate whose  
15 surface is coated with a polymer compound film  
subjected to a rubbing process.

8. A method according to claim 4 or 5,  
wherein said substrate is a substrate whose  
20 surface is coated with a Langmuir-Blodgett film  
of polymer compound.

9. A method according to any one of claims  
4 to 8, wherein the substrate is coated with the  
25 surfactant solution by a pen lithography method.

10. A method according to any one of claims

4 to 8, wherein the substrate is coated with the surfactant solution by an ink jet method.

11. A method according to any one of claims 4 to 8, wherein the substrate is coated with the surfactant solution by a dip coating method.

12. A method of preparing porous materials, comprising the steps of:

10 coating a substrate having alignment control ability with a solution of surfactant containing silicon alkoxides;

drying said substrate; and  
removing the surfactant.

15 13. A method according to claim 12, wherein said step of coating said substrate with said solution is a step of selectively coating a desired position of said substrate with said  
20 solution in a desired shape.

14. A method according to claim 12 or 13, wherein said substrate with alignment control ability is a silicon single crystal substrate  
25 having (110) orientation.

15. A method according to claim 12 or 13,

wherein said substrate is a substrate whose surface is coated with a polymer compound film subjected to a rubbing process.

5           16. A method according to any one of claims 12 or 13, wherein said substrate is a substrate whose surface is coated with a Langmuir-Blodgett film of polymer compound.

10           17. A method according to any one of claims 12 to 16, wherein said substrate is coated with said surfactant solution by a pen lithography method.

15           18. A method according to any one of claims 12 to 16, wherein said substrate is coated with said surfactant solution by an ink jet method.

19. A method according to any one of claims  
20 12 to 16, wherein said substrate is coated with said surfactant solution by a dip coating method.

20. A method of preparing porous materials, comprising the steps of:

25           (A) attaching a solution containing silicon and surfactant to a substrate having alignment control ability; and

(B) removing the solvents contained in said solution attached to said substrate.

21. A method according to claim 20, wherein  
5 silicon is contained in said solution in the form of compound.

22. A method according to claim 20, wherein  
silicon is contained in said solution as silicon  
10 alkoxides.